



Department of the Environment

*The 2006 Healthy Air Act
New Clean Air Act Power Plant Requirements
Greenhouse Gas Emission Reduction Act of 2009*



Senate Finance Committee- April 1, 2014

Robert Summers, Ph.D., Secretary, MDE

Tad Aburn, Air Director, MDE



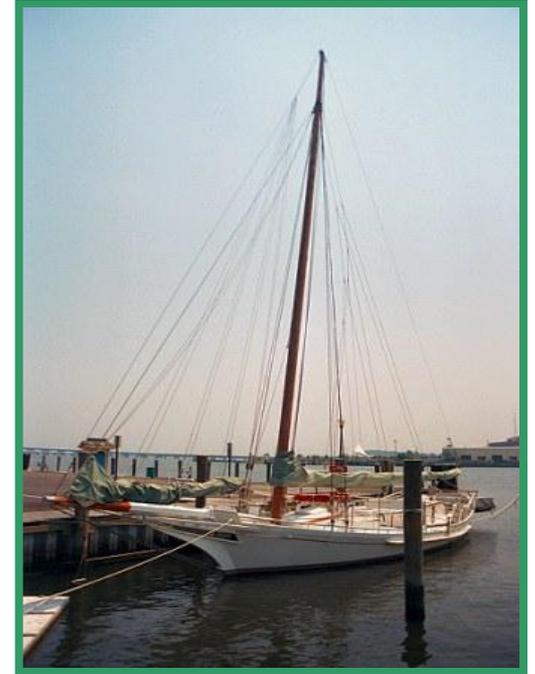
Topics Covered

- Background
 - Improving Air Quality
- The 2006 Healthy Air Act
 - A success story
- New Clean Air Act requirements for Maryland power plants
- The 2009 Greenhouse Gas Emission Reduction Act



Maryland's Air Quality Challenges

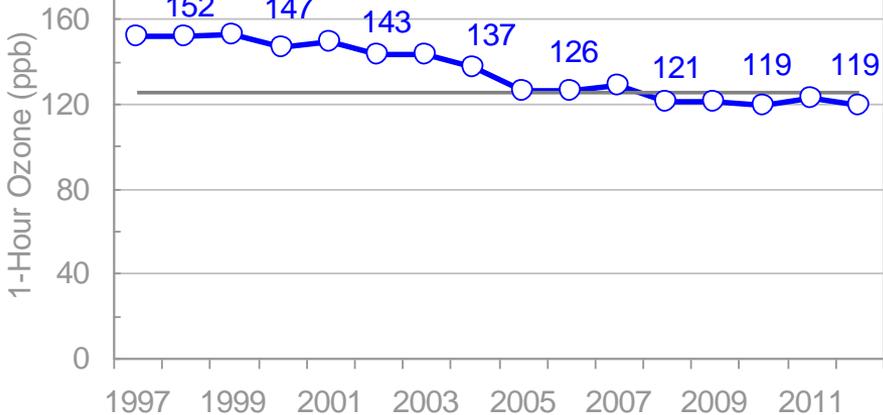
- Ground level ozone (smog) has improved dramatically but we still monitor levels above the health based standard
- Fine particle levels are currently below the health based standards and continuing to trend down - Great news
- Mercury and other air toxics continue to be an issue
- Reducing the contribution from air pollution sources to nitrogen deposition in the Chesapeake Bay is also a priority
- Increasing greenhouse gas emissions, sea level rise, increasing average temperature, dryer summers, wetter winters



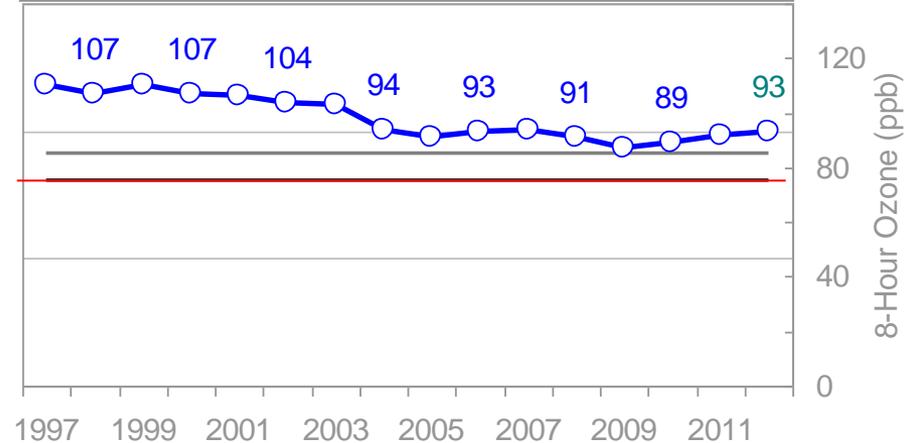


Progress in Cleaning Maryland's Air

1-Hour Ozone



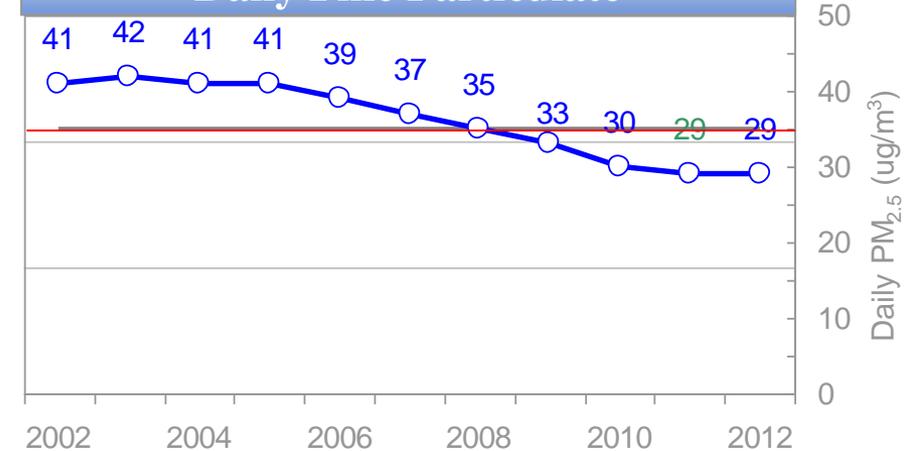
8-Hour Ozone



Annual Fine Particulate



Daily Fine Particulate

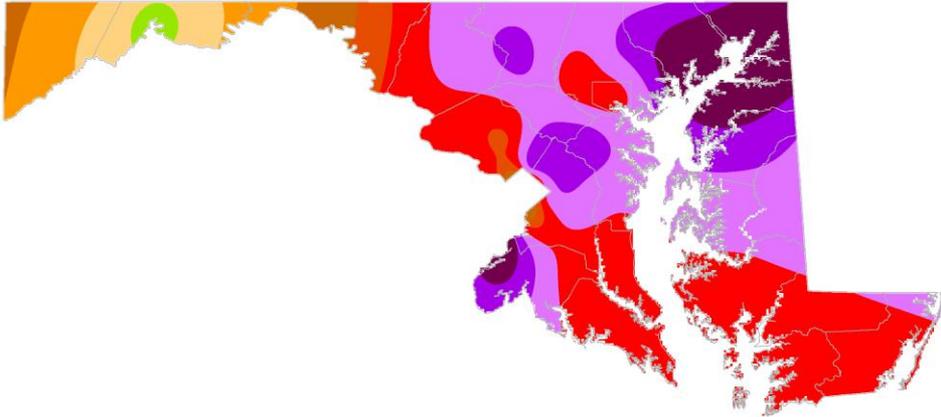


Old Standard 
 New Standard 

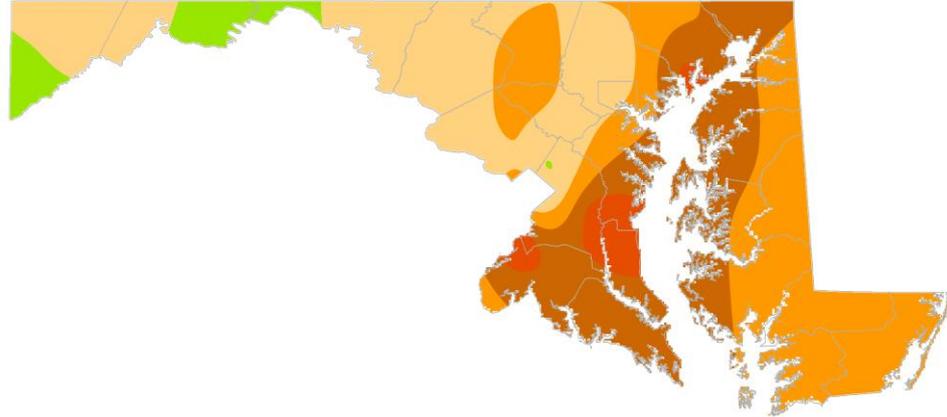


Lower Concentrations & Smaller Problem Areas

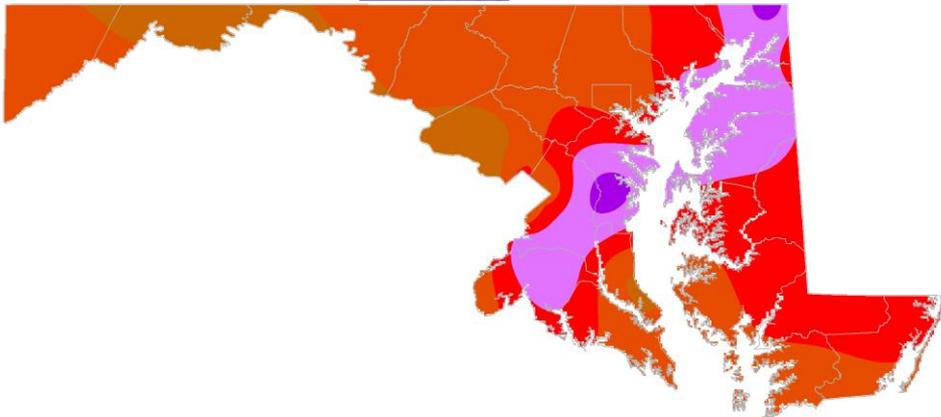
1990



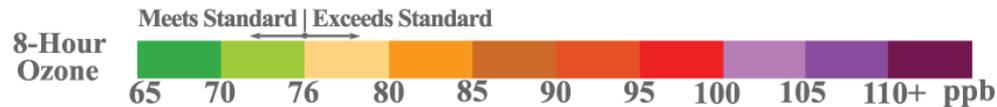
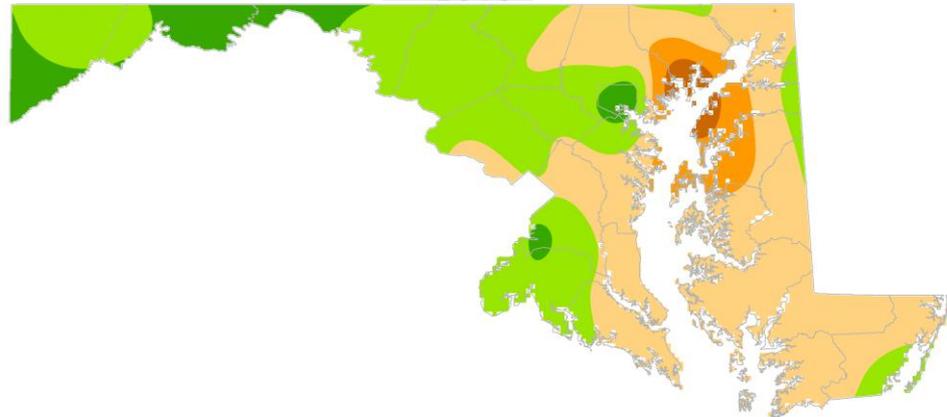
2005



2000



2010





Maryland Healthy Air Act (HAA) of 2006

- Most significant emission reducing program ever adopted in Maryland
 - Thanks to the Economic Matters Committee
- Widely applauded by the environmental community
- Environmental community and utilities worked as partners with MDE and the General Assembly to design and implement the law
- Almost \$2.6 Billion investment for clean air by Maryland utilities
- Helped to dramatically clean the air
 - Fine particle levels dropped dramatically
 - Ozone levels dropped dramatically
 - Mercury emissions dropped dramatically



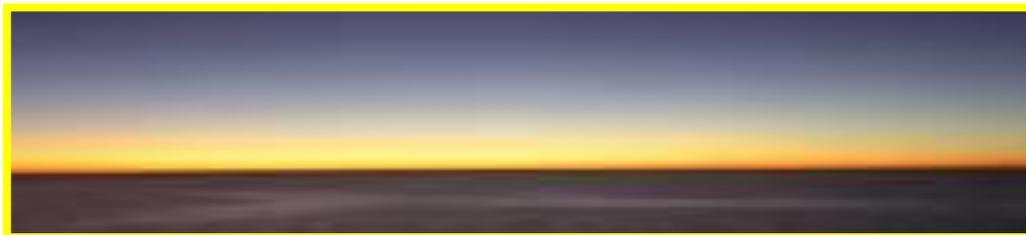
A “Multi-Pollutant” Law

- Now a hot topic in Congress
 - Maryland General Assembly way ahead of the curve
- HAA required reductions in 4 key pollutants at the States largest power plants
 - Mercury
 - Sulfur dioxide (SO₂)
 - Nitrogen oxide (NO_x)
 - Greenhouse gases
 - Also drove reductions in direct particulate, hydrogen chloride and other air toxics



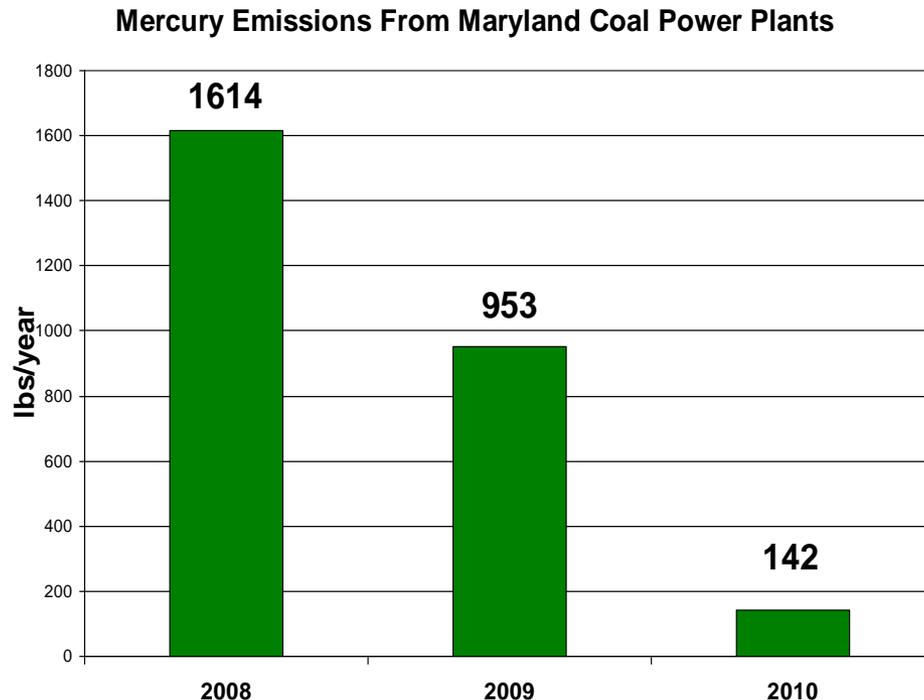
Regulatory Schedule and Jobs

- State regulations adopted on July 7, 2007
 - NOx reductions required by May 2009 (less than 2 years)
 - SO2 and Hg reductions by January 2010 (about 2.5 years)
- Required extensive effort by MD generators
 - Also required significant effort by MDE, the MD Public Service Commission, the MD DNR and others
 - All deadlines met, no extensions needed
- Jobs resulting from HAA implementation
 - About 90 permanent jobs
 - Over 3000 jobs during peak construction period

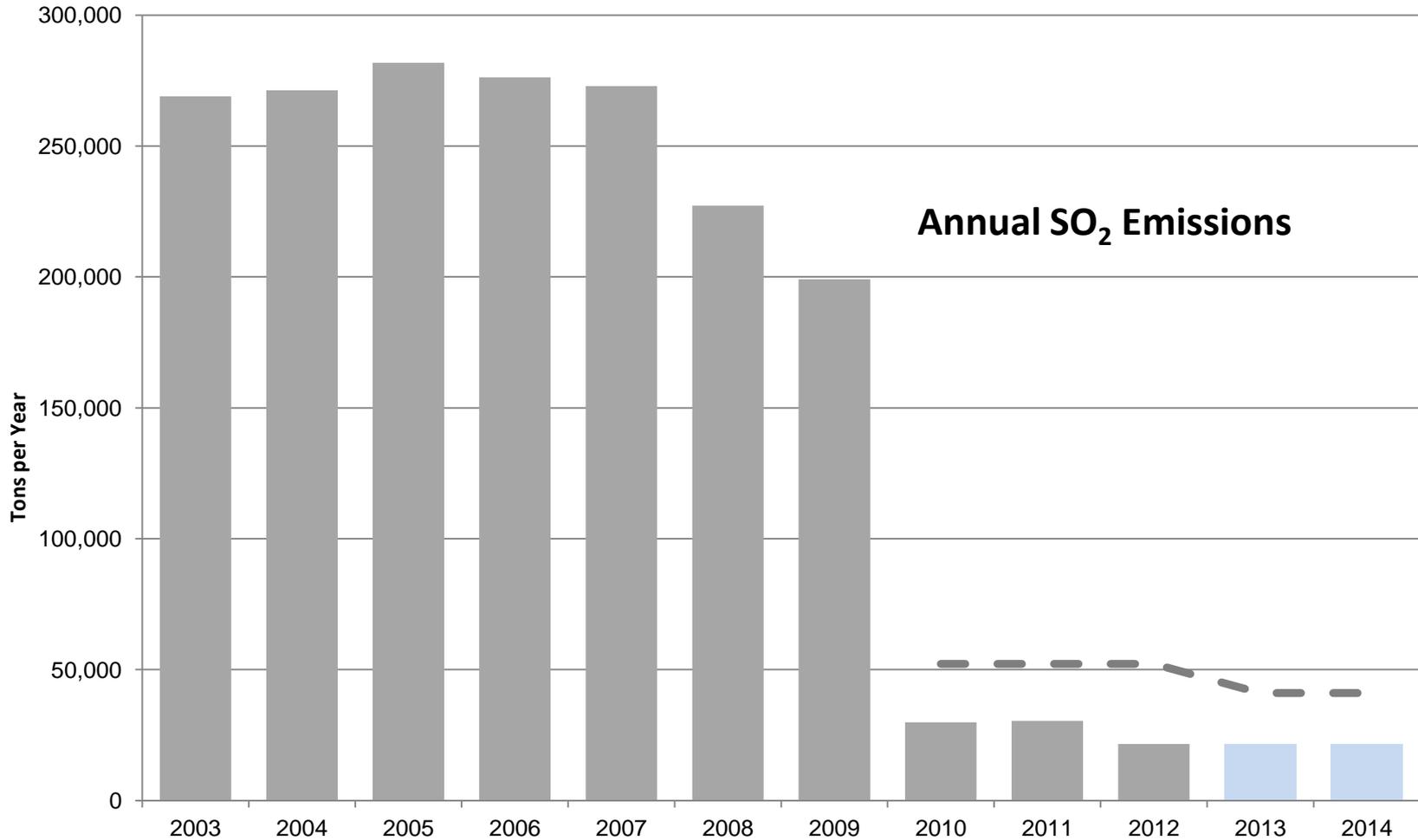


The Results – Mercury & Other Air Toxics

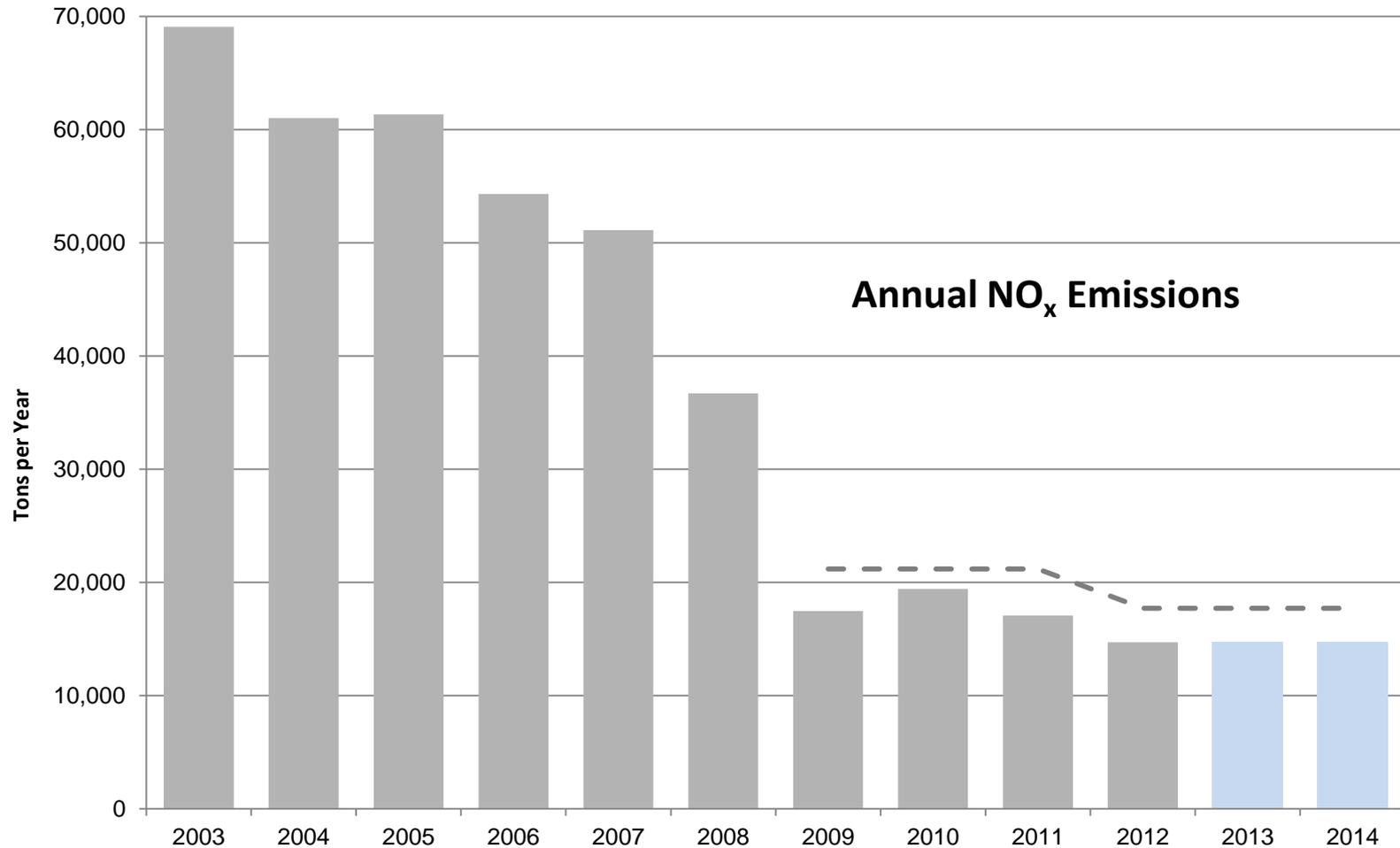
- Mercury
 - Exceeded 2012 90% reduction requirement in 2010
- Hydrogen Chloride (HCl) reduced 83%
- Direct particulate matter reduced 60%



The Results – SO₂



The Results – NO_x



What Did Maryland Generators Think?

- Constellation Energy - 2011

- “We recently completed the installation of a major air quality control system, including scrubbers, a baghouse, and other equipment at one of our major coal facilities in Maryland,” said Paul Allen, senior vice president and chief environmental officer of Constellation Energy.

“These systems work effectively and result in dramatically lower emissions of mercury, sulfur dioxide, particulate matter, and acid gases. We know from experience that constructing this technology can be done in a reasonable time frame, especially with good advance planning; and there is meaningful job creation associated with the projects.”

- March 16, 2011 press release



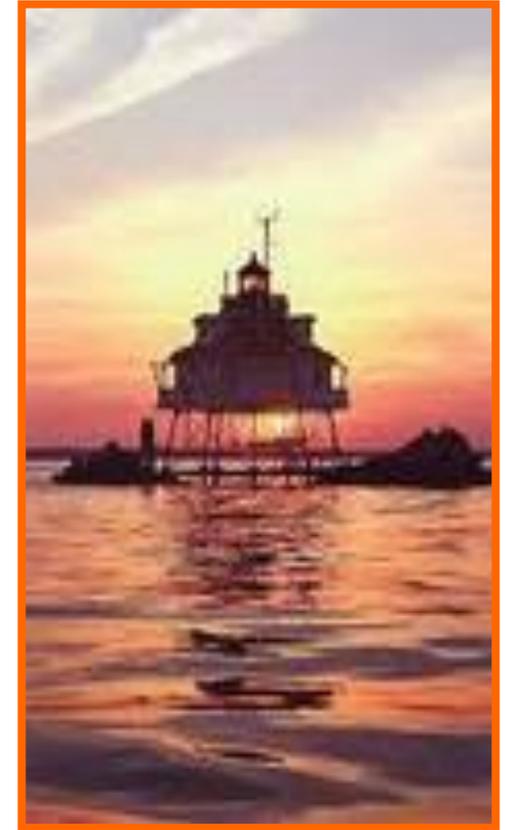
New Challenges

- Under the Clean Air Act, the health based ambient air quality standards are updated to reflect new health science on an “every-5-year” schedule
- Recently, EPA finalized two new – tougher – standards for both ground level ozone and sulfur dioxide (SO₂)
- These new standards drive new requirements for power plants
- New requirements fit under the existing overarching umbrella of the HAA
 - Legislative changes not required



Working With Stakeholders

- MDE has been working with stakeholders for over a year on this new regulation
 - Affected Sources
 - Environmental Advocacy Community
 - Others
- One-on-one meetings dating back to 2012
- Comprehensive formal stakeholder process started in October 2013
 - 3 meetings so far
 - Working to provide maximum flexibility
 - Clean Air Act requires new regulations to be completed by summer of 2014
- Stakeholder material may be found at:
www.mde.state.md.us/programs/regulations/air/Pages/StakeholderMeetings.aspx



The New Ozone Standard

- Implemented by EPA in 2012
 - 75 parts per billion (ppb) as an 8-hour average
 - Comply by 2018
- 2006 HAA designed to meet older 85 ppb standard
 - Comply by 2010
- Ozone is formed when emissions react with intense summer sunlight
- The remaining ozone problem is very focused on the hottest summer days and peak daily emissions during those days
- New requirements focus on reducing peak hourly emissions
 - The HAA did not have this focus



The New SO₂ Standard

- Finalized by EPA in 2010
 - 75 ppb as a 1-hour standard
- Power plants are the primary emission source for SO₂
- This new standard focuses on potentially high concentrations around power plants
- Again, the new requirements are designed to reduce peak hourly emissions
 - The HAA did not have this focus



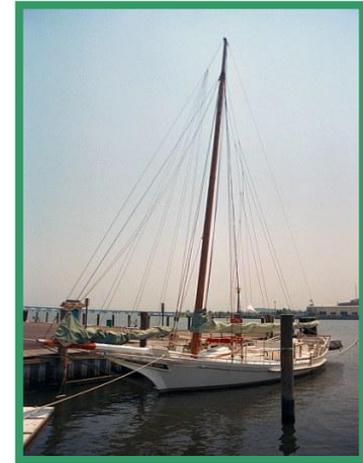
Health Impacts-Ozone

- Ground level ozone is Maryland's most pervasive air pollution problem
- Continued exposure to levels above the standard is linked to
 - 30% of the asthma nationally is attributed to air pollutants
 - Asthma in MD children is 23% higher than national average
 - Approximately 15 early mortalities each year in Maryland
 - Other significant respiratory disease
 - Chronic bronchitis, acute bronchitis, upper and lower respiratory problems



Health Impacts – SO₂

- Short-term SO₂ exposure is linked to:
 - Increased ER visits and hospital admissions for respiratory illnesses
 - Especially in children, the elderly, and people with asthma
 - Reduced lung function during exercise in some people with asthma
 - Respiratory symptoms in children, particularly those with asthma



The New NOx Regulations

- Required by the Clean Air Act because of the new health standards for ozone
 - NOx is the primary pollutant that is “cooked” by sunlight to create ground level ozone
- Deadline for Maryland to adopt the NOx regulations is early summer 2014
- Maryland must also submit a new clean air plan (called the SIP or State Implementation Plan) by 2015



The New SO₂ Regulations

- Required by the Clean Air Act because of the new health based standard for SO₂
- Because of potential health risk, states are expected to develop control programs and plans as expeditiously as possible
- EPA guidance also allows states more time if there are technical issues that require more time to address
- Maryland is moving ahead quickly to insure protection of public health



What Will the New Regulations Do?

- Both regulations will require reductions at units with high peak day emissions
- These are usually the smaller units that have invested less in control technologies
- Larger, well controlled units will generally be OK
 - HAA allowed companies to focus controls on the largest units ... that have the most cost-effective reduction opportunities
- The new regulation will not change the “caps” set up under the HAA
 - May shift how companies choose to meet those caps
 - Will not require any changes to the HAA





What About Pollution from Upwind States?

- Yes – this is a big deal
- Maryland runs a sophisticated air pollution research program
- Our data show that on bad air days 50% to 70% of our ozone problem comes from upwind states
 - A significant equity issue
- On December 9, 2013, Governor O’Malley and 8 other Governors submitted a Clean Air Act Petition to level the playing field on air pollution controls in upwind states
- Maryland is also challenging EPA over other state’s air plans that do not include “Good Neighbor” commitments

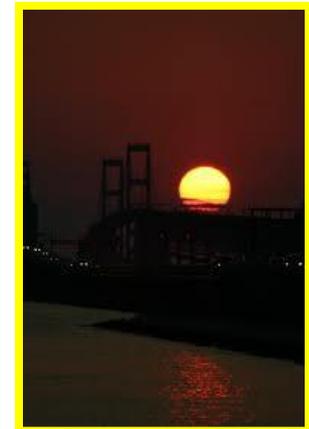




The Greenhouse Gas Emission Reduction Act

A Very Brief Update

- Sponsored by the Governor and adopted by the General Assembly in 2009
 - Requires a 25% reduction in greenhouse gas (GHG) emissions by 2020
 - Also requires a positive impact on the Maryland economy and jobs
- Comprehensive public process
 - Input from interested parties since 2009
 - Series of “across the state” workshops in 2012
 - Over 2000 comments submitted



The “Plan”

- Comprehensive multi-sector, multi-agency plan
 - 150+ Initiatives
 - Final plan submitted to the General Assembly in July of 2013
 - <http://climatechange.maryland.gov/>
- Will achieve the GHG emission reduction goal of 25% by 2020
- Net benefit of \$1.6 billion in economic output to the Maryland economy
- Total of 37 thousand jobs will be created and maintained in 2020
- MDE and other agencies continue to enhance all data and analyses



Questions?

